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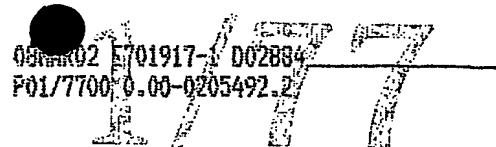
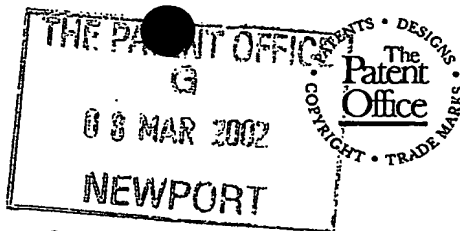
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The Patent Office

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1. Your reference P30830-/LMM/MEA

2. Patent application number 8 MAR 2002
0205492.2

3. Full name, address and postcode of the or of each applicant (*underline all surnames*)
OTV Societe Anonyme S A
L'Aquarene, 1 Place Montgolfier
St Maurice, Cedex
94417
France

Patents ADP number (*if you know it*)

If the applicant is a corporate body, give the country/state of its incorporation

France

8339709001
5.3.03

4. Title of the invention Water Filter and Treatment Units

5. Name of your agent (*if you have one*)
"Address for service" in the United Kingdom to which all correspondence should be sent (*including the postcode*)
Murgitroyd & Company
Scotland House
165-169 Scotland Street
Glasgow
G5 8PL

Patents ADP number (*if you know it*)

~~P198013~~

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (*if you know it*) the or each application number

Country	Priority application number (<i>if you know it</i>)	Date of filing (<i>day / month / year</i>)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing (<i>day / month / year</i>)

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a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
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Yes

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Continuation sheets of this form

Description

9

Claim(s)

-

Abstract

-

Drawing(s)

1

+ 1 

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Priority documents

-

Translations of priority documents

-

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

-

Request for preliminary examination and search (Patents Form 9/77)

-

Request for substantive examination (Patents Form 10/77)

-

Any other documents (please specify)

-

11. I/We request the grant of a patent on the basis of this application.

Signature



Murgitroyd & Company

Date

7 March 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

Mark Earnshaw

028 9032 0441

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1 Water Filter and Treatment Units

2
3 The present invention relates to water filter and
4 treatment units for use in host water treatment
5 apparatus.

6
7 In the production of treated and/or purified water,
8 for example ultra-pure water for laboratory use,
9 several components are generally used in conjunction
10 to provide the desired water quality. Some of these
11 components may be used in parallel or in series, and
12 some are more critical than others to the final
13 water quality. Nevertheless, the full and correct
14 performance of all the components is generally
15 essential to guarantee the treated water quality.

16
17 To ensure that the final water quality is of the
18 required standard, quality monitors are usually
19 installed either within or external to the water
20 purification unit to monitor key water parameters on
21 an ongoing basis. Typically these will include, but
22 are not limited to, resistivity, conductivity,

1 temperature, Total Organic Carbon (TOC), flow rate,
2 etc.

3
4 Notwithstanding the above monitoring, for certain
5 applications, industry regulations require
6 traceability of components that affect the final
7 water quality. Typically, this information is
8 required by companies producing pharmaceuticals or
9 similar products. Currently, this is generally
10 carried out by manual logging of component
11 information.

12
13 Meanwhile, components can often be installed and/or
14 used in more than one position in a water treatment
15 apparatus. In other situations, optimum performance
16 of the apparatus can be obtained by using the
17 components in different positions at different
18 instances. However, incorrect performance and/or
19 positioning cannot currently be prevented, which may
20 seriously undermine the water quality and
21 production.

22
23 Additionally, it is a desire to know how much
24 capacity or operational lifetime is retained within
25 a component. However, as most components are sealed
26 units, this is impossible to forecast before the
27 component suddenly expires or breaks down, again
28 potentially significantly affecting the water
29 production. This may cause inconvenience to the
30 user who would often prefer to schedule component
31 changes at specific times.

32

1 It is an intention of the present invention to
2 obviate the above disadvantages.

3 Thus, according to one aspect of the present
4 invention, there is provided a water treatment
5 component for use in a host water treatment
6 apparatus, wherein the component has an electronic
7 circuit which can co-operate with an electronic
8 circuit in the host apparatus.

9
10 The co-operation may be one way, either from unit to
11 host or vice versa, or two-way.

12
13 The component circuit and host circuit can
14 communicate via radio, infrared, or any other
15 transmittable waveforms including optical and
16 magnetic contact. Preferably, the circuits
17 communicate by physical electrical contact for
18 maximum robustness of connection, and to minimise
19 interference by other means of communication.
20 Preferably co-operation of the circuits is only
21 possible when the communication is correctly
22 created, and this is only achieved when the
23 component is correctly installed and/or fitted with
24 the host apparatus.

25
26 Each electronic circuit preferably includes a memory
27 capacity and a capability to read/interrogate the
28 other electrical circuit. The electrical circuit in
29 the host apparatus is preferably a central
30 processor, and the electrical circuit in the
31 component is preferably a data chip, e.g. a
32 microchip such as well known in the art.

1

2 The electronic circuit of the component is
3 preferably integral with the component, and more
4 preferably, is formed integrally with the component
5 during the component manufacture. The electronic
6 circuit is preferably embedded into or mounted onto
7 the component.

8

9 The electronic circuit of the component preferably
10 includes a database having relevant data relating to
11 that component such as validation information,
12 process information, and/or manufacturing
13 information. Typical information includes, but is
14 not limited to, date of manufacture, date of
15 testing, operator, cartridge type, media type(s),
16 media volumes, media lot numbers, quality control
17 details, and possibly a unique reference code.

18

19 The data of the component electronic circuit could
20 be encrypted.

21

22 According to one embodiment of the present
23 invention, the electronic circuit of the component
24 provides an enablement signal to the electronic
25 circuit of the host apparatus, and/or vice versa.

26

27 The enablement signal may include means for the
28 component or host to control the other part.
29 Preferably, the unit and host inter-co-operate.

30

31 Information that can be communicated between the
32 electronic circuits of the component and host

1 generally include validation information, production
2 information and/or manufacturing information. Such
3 information in the unit could be accessed from the
4 host apparatus and be displayed by the host
5 apparatus.

6
7 If necessary or desired, the same information in the
8 unit could be accessed via a separate reader device
9 or otherwise communicated to a remote reader, for
10 analysis and/or display.

11
12 In typical operation, the electronic circuit of the
13 component includes at least a data tag, and the
14 presence of the data tag is identified by the
15 electronic circuit of the host apparatus upon
16 correct fitment and/or installation of the
17 component, which creates a two-way communication
18 protocol. The host apparatus can then upload
19 relevant data from the data tag, etc. and the
20 component's circuit can download the relevant
21 information from the host unit.

22
23 In another embodiment of the present invention, lack
24 of co-operation between the electronic circuit of
25 the component and electronic circuit of the unit
26 indicates the incorrect fitment and/or installation
27 of the component with the unit, or incorrect
28 location of a component on a host apparatus where
29 more than location is possible.

30
31 In another embodiment of the present invention, the
32 lack of co-operation between the electronic circuit

1 of the component and the electronic circuit of the
2 unit identifies incorrect operation of the component
3 and/or host apparatus, e.g. a water leak.

4

5 The present invention extends to the combination of
6 a water treatment component as hereinbefore defined
7 with a host water treatment apparatus having a
8 co-operable electronic circuit.

9

10 In a further embodiment of the present invention the
11 water treatment component of the present invention
12 is a consumable and/or replacement unit. This
13 includes water treatment units containing ion
14 exchange resins, filters, media, etc.

15

16 According to a yet further embodiment of the present
17 invention the water treatment component of the
18 present invention is an operational unit. Such
19 operational units include means to sanitise and/or
20 clean e.g. by way of disinfection and/or chemical
21 cleaning, one or more parts of the host apparatus.
22 This may be by means of a component that contains
23 the sanitant or by the fitment of dummy components
24 in place of components that may be damaged by the
25 sanitant.

26

27 The present invention provides the benefits of
28 electrical co-operation and data tagging. These
29 include one or more of correct
30 installation/fitting/use of components, correct
31 location of relevant components in a host apparatus,
32 error-free transfer of information of component

1 origins and/or history, automatic start and/or use
2 of components such as sanitisation units, and
3 prevention of incorrect components, such as half-
4 used components, and out of date or inappropriate
5 components.

6 An embodiment of the present invention will now be
7 described by way of example only, and with reference
8 to the accompanying and diagrammatic Fig. 1 showing
9 a water treatment component and host water treatment
10 apparatus according to one embodiment of the present
11 invention.

12
13 Referring to Fig. 1, there is shown a water
14 treatment component 2 and a host water treatment
15 apparatus 4. The component 2 has an embedded
16 microchip 6, which can co-operate with an electronic
17 interface 8 on the host apparatus 4. The remaining
18 part of the electronic circuitry in the host
19 apparatus 4 is not shown.

20
21 The component 2 includes inlet and outlet water
22 ports 10a,12a, to fit with complementary inlet and
23 outlet water ports 10b,12b on the host apparatus.

24
25 The host apparatus includes a purified water outlet
26 14, and an electronic display 16.

27
28 The host apparatus 4 is a water purification unit,
29 and the component 2 is a consumable resin cartridge.

30
31 The microchip 6 includes a database retaining
32 product master records including date of manufacture

1 of the component 2, date of testing, operator,
2 cartridge type, media type (within the component),
3 media volume, media lot numbers, quality control
4 details, and a unique reference code. Only the
5 correct installation and fitting of the component 2
6 within the opening in the host apparatus 4, allows
7 the microchip 6 to engage and co-operate with the
8 interface 8 on the host unit 4.

9
10 Once the component 2 is fitted correctly, the
11 electronic circuitry in the host apparatus
12 identifies the presence of a data tag on the
13 component 2, such that a two-way communication
14 protocol is established. Once communication has
15 been made, the host apparatus 4 can upload relevant
16 data from the microchip data tag 6, and the micro
17 chip data tag 6 can download relevant information
18 from the host apparatus 4. The information uploaded
19 to the host apparatus includes performance
20 validation criteria such as lot numbers, dates and
21 content type and property. Information which is
22 downloaded into the microchip data tag 6 includes
23 date of commencement of operation and volume of
24 water used on an ongoing basis. The combination of
25 this information allows improvement in determination
26 of consumable lifetime.

27
28 Some or all of this information could be displayed
29 on the display 16 on the host apparatus 4. This
30 could include visual warning of any incorrect
31 operation, or end of life-time of the component 2.

32

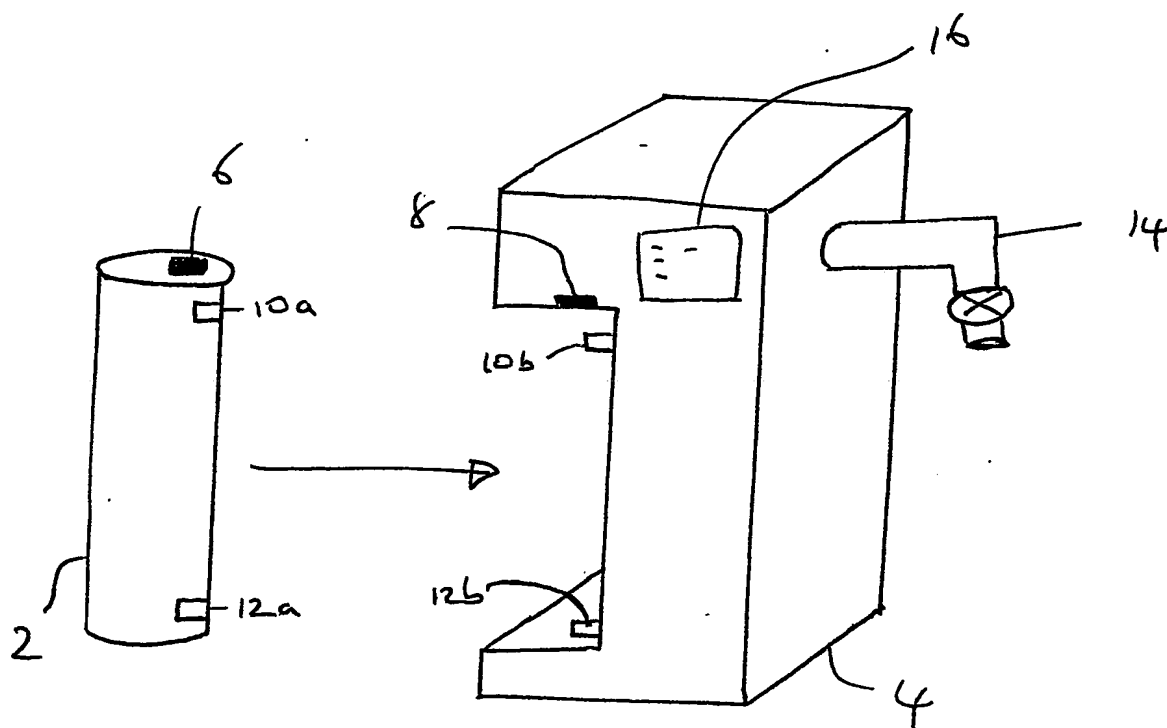
1 Because the host apparatus electronic circuitry can
2 identify the presence, or not, of a data tag, it can
3 be used to prevent leaks from the apparatus 4, in
4 that if a component is not fitted correctly with its
5 data tag in place, then the apparatus 4 will not
6 operate and thus prevent leaks occurring.

7
8 Moreover, if the component 2 could be fitted in more
9 than one opening in the host apparatus 4, incorrect
10 fitment of the component 2 in the wrong position
11 could be prevented due to the unique identifier code
12 on each data tag.

13
14 The memory in the host apparatus electronic
15 circuitry could also detect if a particular data tag
16 has been previously used in a particular position,
17 and hence also prevent a situation where optimum
18 performance is not obtained. Furthermore, if
19 certain changes to the configuration of components
20 is required prior to carrying out such functions as
21 sanitisation then this configuration can be
22 ascertained prior to entering that mode.

23
24 The present provides a number of clear advantages,
25 including increased automation of information
26 logging, prevention of use of components in an
27 un-optimised manner, greater user awareness of
28 remaining operational life time of components, and
29 prevention of mis-connection/mis-installation which
30 could compromise final water quality, etc.

Fig 1



10/23/2011 10:07:11 AM
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10-23-2011 10:07:11 AM
10-23-2011 10:07:11 AM

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